

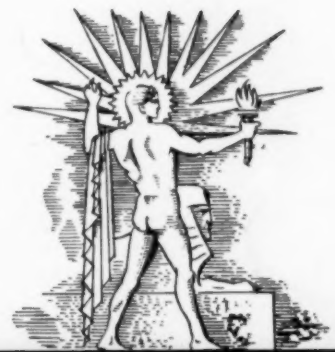
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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •



October 28, 1939

An Ancient

See Page 286

A SCIENCE SERVICE PUBLICATION

Do You Know?

A road in California is paved with walnut shells.

Camouflage paints sold to the British public for buildings are made as nearly non-reflecting as possible.

The most urgent need for the development of Palestine is water; and conservationists recommend fewer and better wells, and wider use of irrigation.

Temperature in Little America, recorded by the first inland weather station in Antarctica, ranged from a little above freezing to more than 80 degrees below zero.

At the rate soil is washed into reservoirs, in the next 50 years one-third of the existing 10,000 or more reservoirs in the United States will be silted beyond usefulness.

Football nerves may affect the coach on the sidelines more than the players says a California psychologist, because the coach lacks the physical outlet for emotional strain.

A zoologist calls the capybara of South America the most friendly and gentle of wild animals, although this four-foot-long rodent has front teeth strong enough to cut corrugated iron.

The European war has halted one of the University of California's research projects: documents sent to London to be photographed and photostated have been temporarily buried there in vaults or sent to dugouts in outlying towns.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

AERONAUTICS

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AERONAUTICS—PHYSIOLOGY

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What "color filters" enable your eyes to see in color? p. 285.

PUBLIC HEALTH

How will war in Europe affect world health? p. 280.

What are the ten safety commandments for fall hunters? p. 283.

What will the soldier's identification tag have added to it? p. 280.

There are about 350,000 American citizens living outside the United States.

Waters of the Pacific coast are less transparent, transmit less light, than those of the Atlantic.

Vapor springs in Italy are now a source of electric power and chemicals, including boric acid, hydrogen, carbonic acid, and sodium perborate.

The European corn borer is attacking dahlias in New York State gardens.

Louisiana has a new industry: scales of the garfish make modernistic jewelry and novelties.

War will stimulate interest in television sets, one company believes, because news can be made more graphic by visual devices.

SCIENCE NEWS LETTER

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MEDICINE

Present War May Bring Conquest Of Influenza

If Conflict Precipitates an Epidemic Like That Of World War, Either Vaccine or Lamp May Subdue It

THE CONQUEST of influenza may come out of the war now raging in Europe, Lieut. Col. A. Parker Hitchens, M.C., professor of public health at the University of Pennsylvania, said at the meeting of the American Public Health Association at Pittsburgh.

The Spanish-American War, he pointed out, gave Walter Reed the opportunity to conquer yellow fever. That war and the World War led to the vaccination and sanitation methods which now keep typhoid fever under control.

Influenza swept the world in a devastating epidemic during the closing years of the World War, and medical and health authorities have stated that it would probably do the same if the war in Europe continues. Col. Hitchens takes a more optimistic view.

Two weapons, a vaccine and a germ-fighting lamp, are ready for trial in the next great influenza epidemic. Either or both of them may emerge from such a trial as a practical means of preventing influenza. At least three institutions in America and one in England have already vaccinated small groups of people. If these groups come through the next great epidemic without having influenza, the value of the vaccines will be shown. The institutions are all guarding their vaccination work as carefully as any general guards his war plans, because they are not ready yet to vaccinate the entire population, even in the event of an epidemic. Under such conditions they could not get the accurate information necessary for a real appraisal of the vaccines. But they are ready and waiting for the results with the groups already vaccinated to show whether the entire population of a nation can be protected against influenza.

The influenza-fighting lamp was described by Prof. William F. Wells and his wife, Dr. Mildred Weeks Wells, of the University of Pennsylvania. The lamp is designed to fight any disease like influenza whose germs travel through the air, by letting down a curtain of ultraviolet rays to keep the germs out of a room and to kill any that may already be

in the room. Similar lamps are being used in many operating rooms throughout the country to keep germs out of open wounds.

Schools and hospitals are already, in a few places, using the Wells lamp to protect children from germs of influenza, measles, and similar infectious diseases. English, French and Canadian medical authorities, hearing about it at the Microbiology Congress in New York recently, are considering use of the lamp in dormitories to protect children, especially where there is crowding due to evacuation of children from London, Paris and other large cities.

Protection of soldiers in barracks from getting influenza is seen by authorities as a possible wartime use of the lamps, although this has not yet been announced by Prof. and Dr. Wells.

Science News Letter, October 28, 1939

War on Gonorrhea

AMERICA has declared war, in the nick of time, against gonorrhea, it appears from discussions of this devastating disease which spreads like syphilis but is not yet so commonly mentioned.

The declaration of war against this disease foe was hailed by Dr. N. A. Nelson of the Massachusetts Department of Public Health in a report to the meeting. Gonorrhea has been neglected, even though there has for several years been a public drive on syphilis. With powerful weapons such as sulfanilamide and heat treatments for controlling gonorrhea already at hand, Dr. Nelson sees little excuse for failing to wipe it out.

The war on gonorrhea has been declared, however, and the timeliness of it is seen by those who, reading news of war in Europe today, remember the world-wide increase in both gonorrhea and syphilis that followed in the wake of the World War. During that war, army, navy and public health officials were vigorous in their fight to control these diseases. After the war was over, the army and navy officials had no more authority over the discharged soldiers



FLU-FIGHTING LAMP

The rays from this ultraviolet lamp throw down an invisible curtain of protection being used to protect school children from germs. A. H. Young, of the General Electric research laboratory is here demonstrating how the lamp will kill the germs in a petrie dish held near it.

and sailors, and the health officer, Dr. Nelson said, "with a hefty sigh of relief, promptly resigned from the vice squad and returned to the more 'moral' business of controlling those diseases which it is respectable to have."

By starting now to control gonorrhea and syphilis, health authorities can probably prevent any post-war epidemic wave of these diseases, if such should be on the way.

Science News Letter, October 28, 1939

New Malaria Menace

A NEW and grave malaria menace has emerged from Egypt, land of Biblical plagues, to worry American health authorities. News of the threatening situation was brought by Dr. Harry Most, of New York University College of Medicine.

The danger is that malignant tertian malaria, affecting the brain and frequently fatal, may spread from uncontrolled drug addicts to the healthy population. Hundreds of cases have been found in drug addicts in New York City alone during the past few years.

The disease spreads among the addicts because of their custom of passing around a hypodermic syringe for injecting the narcotic drug into the veins. The custom emerged from Egypt in 1929 as a new vogue in drug addiction. Since then outbreaks of malignant malaria

have been increasingly numerous among drug addicts, Dr. Most reported. Malaria patients now admitted to Bellevue Hospital, New York, for example, far outnumber those admitted before this new practise became the vogue among drug addicts.

The malaria parasites in the veins of one addict are transmitted via the hypodermic needle and syringe into the veins of addicts previously free from malaria. But the danger is not limited to addicts.

"Attempts to infect mosquitoes, from addicts recovered from the disease, were successful," Dr. Most reported. "It is felt that a large number of addicts partially or improperly treated who are at large, and those untreated likewise at large, constitutes a grave menace to the healthy population, especially in areas where anopheles (malaria-carrying) mosquitoes are abundant."

To attack the problem, Dr. Most suggested a large survey to determine the amount of this type of malaria and a legal set-up permitting proper disposition of infected persons.

Science News Letter, October 28, 1939

Many Servants Syphilitic

ONE-THIRD of the domestic servants in New York City are syphilitic, if conditions throughout the city are the same as those found in a survey reported by Drs. Sophie Rabinoff and Theodore Rosenthal, of the New York City Health Department. Over 1,000 women were examined through a project carried on by the local Home Relief Bureau. The majority of the group were Negroes.

Almost half of the ones found to be infected were apparently unaware that they had syphilis. Only four patients, 1.2% of the total number found syphilitic, had syphilis in a communicable form. More than 95% of the patients were in the asymptomatic or latent stage of the disease.

Science News Letter, October 28, 1939

Health Training School

AN INSTITUTION like West Point or the U. S. Naval Academy at Annapolis for training health officers to lead the American army of disease fighters was suggested by Dr. Alan Gregg, director of the Rockefeller Foundation, New York City.

Such an institution or a system of substantial scholarships in the existing schools of public health would, in Dr. Gregg's opinion, make it possible to train

the men and women best suited for the important job of health officer in city, county, state or federal health services.

The present high cost of adequate training for such positions keeps out most young people below the upper middle class income level, Dr. Gregg pointed out. This means that the men and women trained for the job of health officer may not understand the needs of the people they expect to serve.

"How," asks Dr. Gregg, "can we expect understanding of the underprivileged to emerge strong and tenacious and self-respecting among students who have never been underprivileged? We may expect a student to have sympathy of a sentimental sort, but not the sympathy and conviction of understanding born of experience."

Science News Letter, October 28, 1939

Unsuspected Cancer Danger

DANGER of patients dying of cancer because it is mistaken for syphilis or other venereal diseases against which there is now a nationwide fight was emphasized by Dr. Robert B. Greenblatt, of the University of Georgia School of Medicine.

Cancer of the reproductive organs is often "clothed in the guise of a venereal disease," he warned. Besides this danger of mistaken identity, cancer may occur together with a venereal disease or may be a direct sequel to one of them that has become chronic. Unless this is remembered, there is danger, Dr. Greenblatt believes, that in preoccupation with efforts to stamp out venereal disease, the cancer will be neither recognized nor treated, with dire consequences to the patient.

To avoid such disasters, Dr. Greenblatt recommends that along with blood, Wassermann and other tests for syphilis and venereal diseases, a bit of tissue should be removed for microscopic examination for cancer in any suspicious cases.

Science News Letter, October 28, 1939

Medical Care Plans Please

MEDICAL care plans with which both physicians and families participating are well pleased, on the whole, have been worked out and put into operation in 25 states by the Farm Security Association, its chief medical officer, Dr. R. C. Williams, of the U. S. Public Health Service, reported.

The FSA medical care program is based on the finding that "a family in

good health was a better credit risk than a family in bad health." The families participating in the program are those "near-relief families" to whom the FSA has loaned money to enable them to continue farming and make a living.

The farm families with incomes from \$20 to \$300 a year obtain medical aid by the pre-payment of \$15 to \$30 a year into a pooled fund. A bonded trustee is in charge of the pooled fund, and he pays all physicians' bills for the group as fully as funds will allow on a monthly, pro rata basis. This is the plan followed in most communities. There are a few variations, chiefly to meet local conditions. The families can go to any doctor they choose who is participating in the plan.

Most of the plans include the following medical benefits: ordinary medical care, including diagnosis and treatment in the home or in the office of the physician; emergency surgery, emergency hospitalization, obstetrical care and ordinary drugs.

Before any plan is established, the state medical association must approve it, Dr. Williams said. The county medical societies then work with the FSA to draw up an agreement for a particular area.

Science News Letter, October 28, 1939

To Reduce Farm Accidents

A CAMPAIGN to save lives of farmers and their families by reducing accidents on the farms was suggested by Dr. J. N. Baker, Alabama State Health Officer.

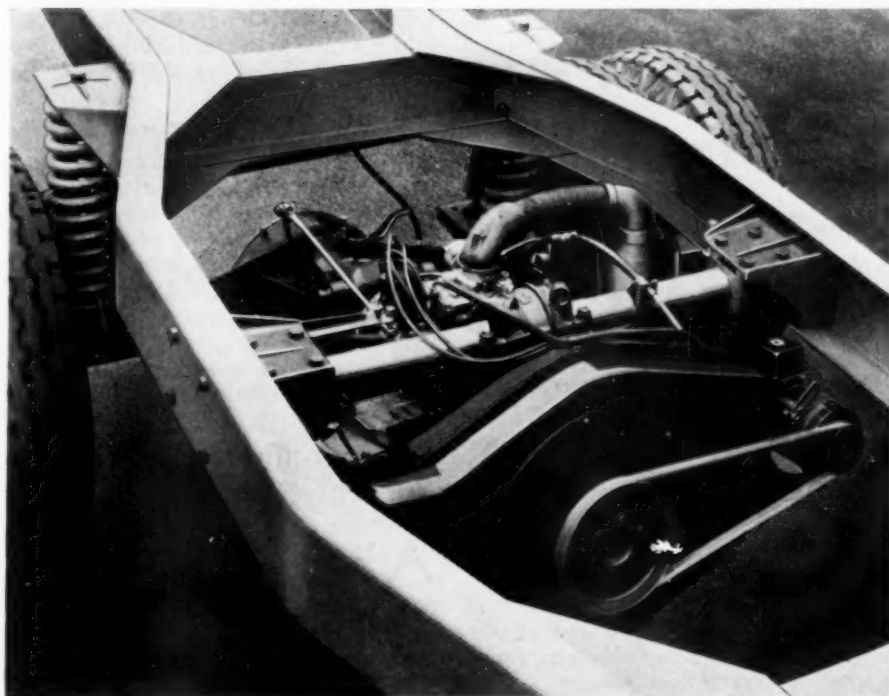
In his state, he reported, people on farms have been dying accidental deaths at the rate of 310 a year for the past six years. Farm activities which caused the greatest number of these accidental deaths are: first, cutting and sawing lumber; second, caring for animals; third, plowing. Farm home accidents occurred chiefly when the victims were playing, walking or sleeping.

Burns were the most important type of fatal injury on farms. Falls come second, firearms third, suffocation fourth, and poisoning fifth.

Dr. Baker urged health officers to get more detailed information concerning causes of farm accidents and to get it as soon as possible after the accident, so they will have the information on which to base a campaign against this preventable cause of death.

"We should consider our deaths from farm accidents as preventable and seek to reduce their number by educational programs," he declared.

Science News Letter, October 28, 1939



MOST UNCONVENTIONAL

A rear engine drive chassis and air-cooled power plant incorporating many aviation features and eliminating 551 wearing mechanical parts used in the conventional truck chassis. Engineered by White Motor Co., Cleveland, it is adapted to milk, bread and other home-to-home delivery trucks.

AERONAUTICS

500 M.P.H. Airplane Wing Forecast in Research Tests

New Wind Tunnel Tests of Army Wing Point to Greater Reliability of Tests on Models in Laboratory

BEHIND a wall of secrecy engineers of the National Advisory Committee for Aeronautics at Langley Field, Va., are working on the design of an airplane wing suitable for speeds of 500 miles an hour, that will keep the United States in the forefront of military aviation.

With high speed wind tunnels and intricate apparatus the NACA engineers will test models of this wing to determine its drag, lift and other characteristics. Months of work and thousands of dollars will hinge on whether these wind tunnel data give a true indication of the wing's performance in actual flight.

While the NACA is giving out no information about its 500-mile-an-hour wing, its newest report on the flight testing of wings contains the implied assurance that what wind tunnel tests

tell about the new wing will be closely confirmed in real flight.

This new report shows that flight tests on the wing drag of an Army Northrop A-17A attack monoplane checks closely the previous wind tunnel tests. Most important, the tests were carried out at very high Reynolds numbers (an aeronautical term depending on air speed, size of the plane and the viscosity of the air) far beyond those obtained in wind tunnel experiments.

This means that American aeronautical engineers can now be much surer of the accuracy with which they can carry over data on models in the laboratory into real plane conditions in actual flight. It thus gives more assurance to current laboratory work on the 500-mile-an-hour wing. *Science News Letter, October 28, 1939*

PHYSICS

Thermal Pump Uses Heat Not Mechanical Energy

AN INGENIOUS "pump" that can compress gases, create vacuums or transfer heat against its normal direction of flow and thus be useful as a refrigerating mechanism, has been invented by the new president of the Carnegie Institution of Washington, Dr. Vannevar Bush.

A patent just issued (No. 2,175,376) describes the new apparatus which Dr. Bush developed while at Massachusetts Institute of Technology in collaboration with Edwin L. Rose, chief engineer of the Waterbury Tool Company.

In contrast to other devices doing a similar job, Dr. Bush's machine uses not mechanical energy but heat energy to accomplish its "pumping" of either gas or heat. Patent rights have been assigned to the Research Corporation, non-profit corporation of New York City, founded to control the proper exploitation of important scientific discoveries.

When used to compress a gas, or transfer heat from a lower to a higher temperature, a substantially constant volume of gas is alternately heated and cooled, thereby alternately raising and lowering its pressure, says the patent.

"In the case of a compressor," continues the patent, "these fluctuations in pressure are utilized to effect the transfer of gas between two regions of different pressure by admitting gas to the system from a region of low pressure when the pressure is low and ejecting gas from the system to a region of high pressure when the pressure is high."

"In the case of the thermal pump, the fluctuations in pressure are utilized to effect corresponding fluctuations in pressure in another but communicating body of gas from which heat is ejected to a region of high thermal potential when the pressure is raised and which is caused to absorb heat from a region of low thermal potential when the pressure is lowered."

Heating of the working substance (a gas) is accomplished by a small burning flame. The system contains a blower to make the working substance flow in the proper directions at the proper times but the patent emphasizes that this blower is used only to control the thermal cycle and does not do mechanical work in compression.

Science News Letter, October 28, 1939

Florida has the longest coastline of any State.

MILITARY SCIENCE

Spiders Help Fight the War; Their Webs Make Cross-Hairs

In Telescopic Gun and Bomb Sights, Range-Finders
And Optical Instruments Webs are Strong and Elastic

SPIDERS take their place in the strange zoo of war, along with carrier pigeons, canaries for detecting poison gas, police dogs, pigs that root out land mines, and the now vanishing Army mule. Their martial role is inconspicuous but vital; indeed, it is hard to imagine how modern war could be waged without their help.

For the so-called cross-hairs that you see in every telescopic gun and bomb sight, every range-finder, every telescope that clocks navigators' time by the stars, every optical instrument of precision whether military or civil, are not hairs at all, but filaments of spiderweb.

Spiderweb threads are ideal for the purpose because they are fine, stronger than steel wires of the same size, and elastic enough to hold themselves tight and therefore straight. The only other material ever used for the purpose is fine platinum wire, and that is usually too coarse.

Spiderweb filaments are "harvested" by only a few persons, who sell their product to the manufacturers of optical equipment. Each one has his own way of operating, which he usually tries to keep a secret of the craft, but basically the method consists in getting the spider to jump off one prong of a wire or wooden fork, and then turning the fork round and round, reeling up the silk which spiders always spin when they drop. The silk thus captured will keep for years if put away in dust-proof containers.

Skilled craftsmen stretch the spiderweb threads across the eyepieces of instruments in which they are to be used, making the ends fast with a drop of varnish, shellac or other adhesive substance. As a rule, the thread as spun by the spider is double; splitting it to obtain a single smooth, fine filament is another job calling for skill, good eye and steady hand.

Some spiders make thicker, rougher threads than others. The ones most favored by the instrument makers are the orb-weavers, that build the beautiful wheel-shaped webs common in gardens. Some of the spiderweb "harvesters" prefer to use the cocoons which certain kinds

of spiders spin around their eggs, unreeling them by much the same technique used by Japanese silk workers.

So strong are these spiderweb "cross-hairs" that breakage in the field is quite unusual. However, if it does occur, and replacements from base are not readily available, resourceful field officers simply catch a spider, put her on a forked twig, and let nature take its course—with a little human assistance. Then they unscrew the eyepiece and replace the broken filament. Such field repairs may not be as smooth and precise as those of the factory workbench, but they suffice.

Science News Letter, October 28, 1939

MINERALOGY

Quiet Hunt Begun in U. S. For Emergency Mines

A QUIET hunt is on for mineral deposits in this country that would not excite mining companies in business to make money. Uncle Sam's mining and geological experts are searching for emergency supplies of "strategic" minerals that are not produced in any large quantity in this country, although they are very necessary in peace and war.

Looking forward to the possibility that war conditions might interrupt over-seas supplies of manganese, chromium and tungsten so essential to making high-grade steels, Congress gave the U. S. Bureau of Mines and the Geological Survey half a million dollars to find and test reserves of deposits of such minerals in this country. Within a week after the money became available in August the Bureau of Mines crews were in the field beginning work on eight promising sites previously selected by government geologists. One is at an elevation of 10,000 feet in Montana where winter weather is closing in.

Deposits that promise large tonnages of metal regardless of grade are being explored as most suitable for emergency reserves, that will not be mined out in normal times.

Drilling, trenching, test pitting and other exploratory methods determine the extent of the deposit. Samples are sent to the metallurgical laboratory to determine extraction methods.

Since over \$10,000,000 has been spent on war minerals claims arising out of hurried and not very successful World War attempts to provide necessary minerals from American deposits, the chances are that this present mineral preparedness will save Uncle Sam money in the long run.

Science News Letter, October 28, 1939

MEDICINE

Sulfapyridine Helps Baby Recover From Influenza

A HUMAN baby and a group of laboratory mice have been helped by the new chemical remedy, sulfapyridine, to recover from severe illness and pneumonia due to infection with an influenza bacillus called *Hemophilus influenzae*. Bacteriologist Margaret Pittman, of the U. S. National Institute of Health, reports.

This bacillus or germ is not the same as influenza virus, generally considered the cause of influenza, and it is slightly different from the strain that causes meningitis. The bacillus is a larger micro-organism, but is often found in patients suffering with influenza and apparently is a nasty customer itself.

The baby, 8 months old, developed conjunctivitis, commonly called "pink eye." Both ears were next affected and then pneumonia set in. Very few pneumococci or true pneumonia germs were found, however, and the influenza bacillus seemed to be the chief cause of the trouble. Sulfapyridine was given by the attending physician, Dr. J. H. McLeod, of Washington, after the pneumonia set in. Within 24 hours the baby was much better and recovered completely in a short time.

This case started Dr. Pittman on her laboratory investigations with mice. Reporting the success of the drug in treating these animals, she says:

"The influence of sulfapyridine on the survival of mice parallels the rapid recovery of the baby following treatment with sulfapyridine. Although this may have been a coincidence, it is obvious that the drug enabled mice to survive. It, therefore, seems justifiable to suggest that the drug be given further trial in the treatment of non-type-specific *Hemophilus influenzae* infections."

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MILITARY SCIENCE

German Economist Credits Britain With Great Strength

Both Economically and in Military Sense, He Considers British a Formidable Foe But Thinks Planes Effective

BRTAIN is no contemptible foe, no mere pushover, as some of the more jingoistic Nazis hopefully believe. Britain is a formidable power still, both economically and in a military sense, declares a German nobelman-economist, E. C. Count Pückler, in a new book, *How Strong Is Britain?*

Count Pückler, who wrote his book some months before the outbreak of the war, bases his estimate on a comprehensive survey of every important material element in Britain's present set-up. He finds the British economic front rather uneven: textile industry in very bad shape, shipbuilding and engineering a little better but still not good; coal in process of recovery from post-war slump; steel in very healthy condition due to heroic modernization efforts during the quite recent past.

Britain's time-honored position as the world's banker (and absentee owner of much of the world's industries) Count Pückler finds considerably impaired.

Heaviest British holdings now are within the Empire; the World War liquidated much of the old financial set-up, especially in the United States.

When he speaks of Britain vis-a-vis an adversary, whether economic or military (but especially the latter) the Count always tacitly assumes Germany as that adversary, though he becomes explicit on the point only once or twice. He admits the naval impregnability of the "tight little island," and the advantage that gives in leisure to train an army for the decisive thrust on the fields of the Continent.

He points out, however, that the situation has become radically changed by the air arm and (perhaps somewhat hopefully) suggests that giant planes may succeed where the submarines of 1914-1918 failed. This may even be a hint of that "devastating, unanswerable weapon" of which Herr Hitler has recently been darkly boasting.

Count Pückler's book ends on a note

of the advantage of intangibles. Admitting that Britain is still the greatest empire in the world, and that by 1941-42 she will be powerfully armed indeed, he declares that she still must court the world's good opinion by pursuing "a morally justifiable foreign policy. The country whose policy is more moral than hers will therefore defeat her without even crossing swords—unless she has already become its friend."

Which, considering the events of the past few months, looks like a rather odd choice of weapons on the part of a spokesman for the Third Reich.

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CHEMISTRY

Japan Plans Program of Synthetic Rubber Making

DESPITE its proximity to the great rubber-producing areas of the East Indies, Japan is planning a long-time program for production of synthetic rubber and other synthetic chemicals. Chemical intelligence to the American Chemical Society reports a special 10-year plan . . . first five years for research and experimental production . . . last five years to perfect actual commercial production. Semi-government corporation for the task to have capital of 50,000,000 yen . . . about \$11,500,000.

Science News Letter, October 28, 1939

FORESTRY

Trenches Used in Forests As Defense Against Fire

TRENCHES are used not only in the deadly warfare of man against man, but in the more useful strife of man against fire. Ordinarily, the wide, shallow trenches that break the forest fire's line of advance are scooped out by hand labor with spades and shovels—back-breaking work.

The U. S. Forest Service has a new trench-digging machine that will make as much as 50 feet of fire-trench a minute—a job for 300 men under some conditions. It is the invention of Jim Bosworth, assistant supervisor on the Kansk National Forest in Idaho.

The Bosworth trencher is mounted wheelbarrow fashion, with a heavy bicycle wheel to carry the 96-pound load of a small gasoline engine and the series of rotating bars or "hammers" that throw the soil aside. One man can push it, and if need be another can harness himself in front and pull.

Science News Letter, October 28, 1939



TRENCH DIGGER IN FIRE FIGHT

New trenching machine for fighting forest fires kicks up dust in digging 50 feet a minute.

PUBLIC HEALTH

War Brings Bad Prospects For Health of Whole World

WAR is about to make a smashing offensive upon the world's continuous upward trend in health. Year after year the U.S.A. has experienced a continuous improvement in mortality—1938 was a banner year. Other lands had much the same trend.

Now war threatens further progress not only in countries at war but possibly for all the world. This is what Metropolitan Life Insurance Company statisticians read in the record for the future.

Added to the direct harvest of battlefield deaths will be heavy toll from diseases associated with hardships to which both soldiers and civilians are exposed. One of the serious consequences of the last World War was a material increase in the death rate from tuberculosis. Even if the world is spared a disease disaster like the 1918-19 influenza pandemic, and another plague is likely, the health prediction is: Gloomy.

Science News Letter, October 28, 1939

PUBLIC HEALTH

Identification Tags May Carry Blood Type Data

THE METAL tag worn by each soldier to identify him when he can't tell his own identity may have added to it an O, A, B or AB, priceless information about the kind of blood needed if the wearer is wounded and must have a speedy blood transfusion.

Life-saving blood will probably be stored in blood banks at base hospitals behind the lines just as it is in modern city hospitals now, typed ready for use. If the soldier is typed before he is wounded, treatment may be speeded. The blood pumped into a person's veins must match that already there, otherwise conflict in the coagulating properties of the bloods may cause shock and even death. Preferably the donor's blood is actually mixed with the patient's in small samples to see that they get along together properly but this may take too long and too much laboratory work in war surgery. Typing and labeling before combat conditions would be a great help. Ideally each soldier would be typed, a big job. The Japanese are said to have done this.

Use of glucose solutions, sweet fluid, and blood plasma, blood strained of its cells, can be used for transfusions without necessity of typing blood. This is

more practical under strenuous emergency conditions, but the lift to the patient is not as great.

Good idea for civilians: Know your blood type, note it on your identification card along with any peculiarities of use to a doctor. You might even have it tattooed on your arm or less usefully but more symbolically over your heart. Particularly "bleeders," whose blood clots with difficulty, and diabetics, who may experience coma hard to diagnose properly, should label themselves plainly with this information for use in emergency.

Science News Letter, October 28, 1939

PUBLIC HEALTH

Hay-Fever Pollens Found In Air Over Atlantic

HAY-FEVER pollens ride the winds over the Atlantic ocean, but only for a relatively short distance off shore, O. C. Durham, chief botanist of the Abbott Laboratories, stated after examining vaselined glass slides exposed by Engineer J. W. Etchison of the Pan-American Airways plane, Yankee Clipper, on a late-summer trip to Europe and return.

Pollens were found at altitudes between 2,000 and 8,000 feet out to 275 miles off shore, the slides indicated. Above 8,000 feet there were practically no pollens over either land or sea. Since the plane did not fly at lower altitudes when far off shore, the possibility still remains that pollens may be present "at the bottom of the air" farther out at sea than the slides showed.

Science News Letter, October 28, 1939

CHEMISTRY

Over 500 Dyes Now Ready For Tinting Nylon Hosiery

AERICAN chemists now have ready more than 500 dyes for tinting the new Nylon stockings, made from coal, air and water, which soon will be on the market, according to the report of P. H. Stott, du Pont chemist, to the meeting of the American Association of Textile Chemists and Colorists in Boston.

Originally created for use on wool, silk and acetate rayons, the dyes work equally well on the new synthetic, silk-like fiber.

The introduction of Nylon and its dyeing, Mr. Stott indicated, is in sharp contrast to the struggles of the then-new rayon industry during the World War. At that time the industry was completely dependent on German dye imports and had difficulty in getting good dyes after the conflict began.

Science News Letter, October 28, 1939

IN SCIENCE

GENERAL SCIENCE

22 Classical Universities Closed by Germany

SOME twenty-two universities in Germany have closed, casualties of war and present political policies there, reports received in this country indicate.

Closing of all but four of Germany's universities—Berlin, Munich, Jena, and Vienna—has been reported to the American scientific journal, *Science*. (Oct. 13)

This means the loss of about 22 classical universities in Germany and Austria and a loss of opportunity for higher education for between 30,000 and 35,000 students in Germany alone.

It is not known whether the closing down applies to other higher educational institutions such as agricultural colleges, institutes of technology and technical schools of college grade.

Attendance at German universities has decreased greatly in recent years, but the total number reported for the year 1937-38 was 47,470 with the University of Berlin credited with 7,463 students, Munich with 4,931 and Jena, 1,033. These are the three classical institutions in old Germany remaining open.

Since the part of Czechoslovakia taken over by Germany is considered as a "protectorate," the university closing policy may not affect institutions there.

No word has yet been received by Washington officials from Warsaw as to the fate of the University there.

Science News Letter, October 28, 1939

MINERALOGY

Yearbook Lists Minerals Needed From Abroad

CROSS off the list of minerals for which the United States is dependent on foreign sources: nitrates, potash and platinum. But our dependence on foreign sources of supply has been increased for these commodities: mercury, because of the exhaustion of higher grade ore bodies, and tin, manganese, chromium, tungsten, and aluminum, because of the tremendous increase in the use of these essential metals. Authority: U. S. Bureau of Mines Minerals Yearbook, 1939.

Science News Letter, October 28, 1939

CE FIELDS

CHEMISTRY

High Dividends Are Paid By Largest Research Budget

LARGEST single research budget in the U.S.A. is probably du Pont's \$7,000,000 annually, exceeded probably only by the aggregate of highly diversified research expenditures of the federal government.

Is it worth while? Just look at the record, as reported in *Chemical and Metallurgical Engineering's* current survey of American chemical industry: 1923, nitrocellulose lacquers; 1927, cellulose film; 1928, synthetic resin enamels; 1929, acetate rayon; 1931, titanium pigments; 1932, synthetic rubber; 1933, synthetic camphor; 1934, rayon tire cords; 1935, urea-ammonia fertilizers; 1936, acrylic acid plastics and resins; 1937, textile fire retardants; 1938, sink and float process; 1939, first synthetic textile fiber made entirely from mineral raw materials which "many regard as the outstanding research achievement of recent years."

Science News Letter, October 28, 1939

PHYSICS

Triple Weight Hydrogen Is Made Radioactive

HYDROGEN of the triple weight variety has been made radioactive in atomic bombardment experiments with the University of California cyclotron. It is a strange kind of hydrogen of mass 3 with a long half-life period of radioactivity and a very short range for the radiation given off from it. (*Physical Review*, Sept. 15)

Drs. Luis W. Alvarez and Robert Cornog obtained the evidence as a follow-up on atom-smashing experiments that showed an unusual kind of helium of mass 3 instead of the usual mass 4 is stable. The research also showed mass 3 helium to be about 12 times as plentiful in helium obtained from the atmosphere as in helium extracted from gas wells.

The helium of mass 3 when used as a bombarding material induced radioactivity in ordinary silicon of mass 28, probably forming phosphorus of mass

30 which broke down into silicon of mass 30 with release of electrons.

The radioactive mass 3 hydrogen was produced by bombarding deuterium (hydrogen of mass 2) with deuterons (hearts of mass 2 hydrogen) by means of the cyclotron.

Ordinary hydrogen is the simplest element of unitary weight or mass one. It is one of the components of water and almost all living and many non-living things. Helium is the next heaviest element, usually of mass 4, and only in recent years has it been available in quantity for use in airships, diving and medicine.

Science News Letter, October 28, 1939

MEDICINE

Clue in Cancer Fight Seen In Gland Grafts in Mice

LATEST lead on cancer comes from research by Dr. John J. Bittner, fellow of the National Cancer Institute working at the Jackson Memorial Laboratory, Bar Harbor, Maine.

Two years ago he found that mamma mice nursing their little mice babies transmitted to them in the milk a "breast cancer producing influence." Those taken away at birth and fed artificially did not develop cancer with undue frequency.

Now Dr. Bittner reports in U. S. Public Health Reports that grafting bits of normal spleen, thymus gland and breast tissue from mice healthy but of a stock predisposed to cancer will make mice of a relatively non-cancer strain develop cancer much more frequently in later life. Since mice are like men and women in many physiological respects, this may eventually throw light on cancer, the killer.

Science News Letter, October 28, 1939

MEDICINE

Soviet Physician Finds Sweet Disguise for Doses

HERE'S a honey of a method of taking medicine. According to reports by Tass, USSR news agency, Dr. N. P. Yoirish, Soviet physician and amateur bee-keeper, dissolves various medicines in sugar syrup and feeds this sweet fare to his bees who compound it invitingly in honeycombs with medicinal strength unimpaired. Sixty brands from the hive-pharmacy containing albumen, bromine, iron, iodine, calcium and other substances, so it is claimed.

Science News Letter, October 28, 1939

AERONAUTICS—PHYSIOLOGY

Pilot's "Black-Out" Due to Anemia of Brain

THE PERSONAL "black-outs" in mid-air, temporary blindness and even loss of consciousness during power dives and inside loops in air battles which European aviators may even now be experiencing, are due to anemia of the brain and slowing down of the flow of blood to the eyes.

This explanation comes from Drs. R. B. Phillips and Charles Sheard of the Mayo Foundation. It is based on tests made by themselves and other investigators of the condition which affects both military and test pilots.

Methods of avoiding "black-out" are few, it is stated. Test pilots have found that it helps to tense the muscles of legs and abdomen. Some yell as loudly as possible when doing a dive, others lean forward when coming out of the dive, and still others use tape on their legs and abdomens, all these measures helping somewhat to keep the blood in the brain and upper part of the body. Another measure suggested for keeping the blood in the head is the use of an inflatable belt which may create as much pressure as 200 millimeters of mercury around the abdomen just as the dive is begun.

Science News Letter, October 28, 1939

MEDICINE

Hundreds of Physicians Can Use Giant X-Ray Viewer

LARGEST X-ray viewer in U.S.A., a giant projector whose special lens and 2000-watt lamp enlarge a standard inside-the-chest plate up to size of a regulation motion picture screen, allows several hundred physicians to join in an educational consultation. The National Tuberculosis Association uses it for demonstrations. The ordinary viewing box commonly used by roentgenologists allows only four or five to see a chest film necessary in detecting tuberculosis.

Science News Letter, October 28, 1939

GENERAL SCIENCE

Intellectual Cooperation Goes On at Same Address

HOPEFUL note on the mail from Paris: The International Institute of Intellectual Cooperation (part of the League of Nations) is carrying on its activities, continuing its work from Paris at its usual address, the Palais-Royal.

Science News Letter, October 28, 1939

ASTRONOMY

Four Planets

Venus Joins Mars, Jupiter and Saturn, Making Brilliant Display in the Early Evening Sky

By JAMES STOKLEY

TO THE display of three planets, Mars, Jupiter and Saturn, that we have been enjoying in the evening for recent months, we now have an addition. Venus is drawing to the east of the sun and, in the middle of November, sets about an hour after sunset. By that time, and possibly even earlier, it should be possible to see it toward the west in the gathering evening twilight.

By December it will be seen without any difficulty whatever. Thus we shall then have four of the five naked eye planets all visible as evening stars at the same time, a very unusual occurrence. This will herald the brilliant lineup that will come at the end of next February, when this quartet will be joined by Mercury, making them all evening stars at once.

As a matter of fact, in November it may just be possible to get a glimpse of this same effect, because on November 7 Mercury is at its farthest east of the sun, and is in the evening sky. But it is so low, as seen from northern latitudes, that it will be hard to locate. People in the southern hemisphere will be able to see it more easily.

But when Mercury next comes east of the sun, and is again in the evening sky, about February 25, it will be much better placed for us. Venus will then also be better.

Jupiter Brightest

Jupiter is now the brightest planet in the sky, and far exceeds any of the stars. It is in the constellation of Pisces, high in the south, as shown on the map. Mars is in Aquarius, farther to the west, as well as lower and fainter. However, it is still unusually bright, and easily found on account of its red color. Our other bright evening planet is Saturn, also in Pisces, to the left of Jupiter.

Vega, in the constellation of Lyra, the lyre, is the brightest star seen about 10 p. m. on November 1 or 8 p. m. on November 30, the times for which the maps are drawn. It is then in the northwest. Above is the northern cross, or

Cygnus, the swan. To the left, directly west, is Altair, of Aquila, the eagle.

Capella, of Auriga, the charioteer, shines in the northeast, and near it, to the right, is Aldebaran, of Taurus, the bull. Below these is Orion, the warrior, whose belt is a vertical row of three stars. Betelgeuse is to the left, and Rigel to the right.

In addition to these stars there is one more now visible which is of the astronomer's first magnitude. This is Fomalhaut, in Piscis Austrinus, the southern fish, seen low in the south, below Aquarius.

A little later in the evening, about an hour after the times of the maps, Sirius, brightest of all the night-time stars, appears in the southeast. This follows Orion, and is generally called the dog-star, because it is in Canis Major, the great dog.

During the night of November 15 there will be a chance to see the meteors, or "shooting stars" of the famous Leonid shower.

Annual Event

Each year, about this date, some are seen, though it has been about three-quarters of a century since the last time they put on a really sensational show. In 1866 and, even better, in 1833, they came in such numbers that the sky seemed to be filled with falling stars. In fact, they were the reason that 1833 is recalled as the "year the stars fell."

Meteors are small particles of iron or stone, the debris of space. When they

enter at high velocity, several miles a second, the friction with the atmosphere ignites them, and they vanish in a flash of light.

A hundred million or more enter the atmosphere daily, so it is fortunate that we have this aerial armor to protect us. Even though most are no larger than a grain of sand, their speed is so high that they would constitute a serious hazard from which we now are spared.

Occasionally, it is true, a meteor arrives that is large enough to penetrate the atmosphere and to land on earth, when it is called a meteorite. There is, however, no clearly authentic record of a person having been hit by one, though a few buildings have been struck.

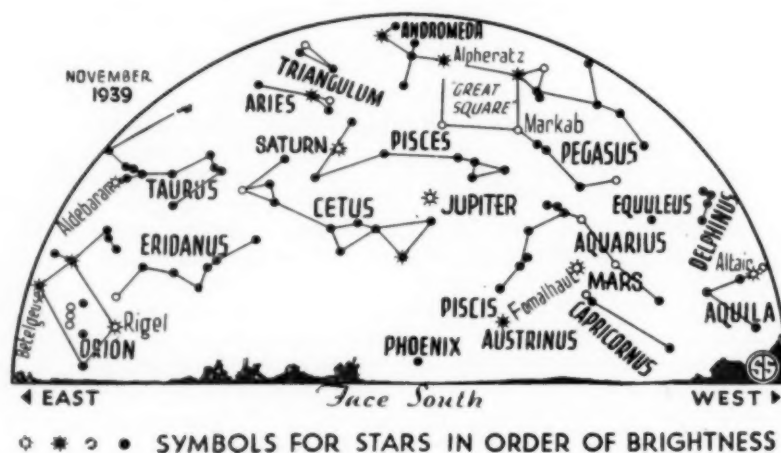
Garage Hit

Last December a garage in Illinois was hit, and so was the car inside. The Field Museum, in Chicago, now has on display not only the meteorite itself, but the roof of the garage, with the hole it made, a similar piece of the car roof, the cushion in which it was found, and the muffler, which was dented by the impact!

Most of the meteors throughout the year are random ones, and many arrive at such speed as to show that they reach the solar system from outer space.

But the Leonid, and other showers, are moving in definite swarms, the remains of comets of days past. These swarms cross the orbit of the earth at various points. When, in our yearly motion, we reach such a point, we encounter a lot of the meteors of that particular shower.

Some of the swarms have the meteors rather uniformly distributed all around,





but that which we cross on November 15 has one large concentrated part, which takes about 33 years to go around. We went through it in 1833 and 1866, but on the two occasions since, when we might have met it again, it missed us, having been switched aside by the gravitational pull of Jupiter.

By now, however, we are approaching another part of the stream, which is probably still on its usual track. On most nights at this time of year we can see an average of 10 to 15 meteors per hour, but on the 15th, or better still, in the early morning of the 16th, one should see about twice as many.

The meteors of the shower may be distinguished from any strays that might come at the same time by reason of the fact that the former all seem to radiate from the constellation of Leo, the lion, which can be seen to the northeast soon after midnight. For this reason they are called the Leonid meteors.

They do not really radiate, however,

but are moving in parallel paths. The radiating effect is one of perspective, the same thing that makes the parallel lines along the wall of a long, straight tunnel seem to come together in the distance.

Science News Letter, October 28, 1939

Celestial Time Table for November

Saturday, Nov. 4, 8:12 a. m., Moon at last quarter. **Tuesday, Nov. 7,** 4:00 p. m., Moon nearest—228,100 miles; 10:00 p. m., Mercury farthest east of sun. **Saturday, Nov. 11,** 2:54 a. m., New moon. **Sunday, Nov. 12,** 10:42 a. m., Moon passes Venus; 7:24 p. m., Moon passes Mercury. **Monday, Nov. 13,** 1:00 a. m., Uranus opposite sun and nearest earth—distance 1,731,000,000 miles. **Wednesday, Nov. 15,** Leonid meteors. **Saturday, Nov. 18,** 6:21 p. m., Moon at first quarter. **Sunday, Nov. 19,** 7:22 a. m., Moon passes Mars; 2:00 p. m., Moon farthest—251,200 miles. **Tuesday, Nov. 21,** 4:49 p. m., Moon passes Jupiter. **Thursday, Nov. 23,** 7:49 p. m., Moon passes Saturn. **Sunday, Nov. 26,** 4:54 p. m., Full moon.

Eastern Standard Time throughout.

Science News Letter, October 28, 1939

MEDICINE

Sulfanilamide Saving Babies Threatened With Peritonitis

BABIES and small children threatened with death from a highly fatal form of peritonitis can be saved by a new treatment including use of the chemical remedies, sulfapyridine and sulfanilamide.

Details of the treatment which cut the death rate from 73% to 20% at Children's Hospital, Boston, are reported by Drs. William E. Ladd, Thomas W. Botsford and Edward C. Curnen, of Harvard Medical School. (*Journal, American Medical Association, Oct. 14*)

Peritonitis generally brings to mind the dangerous complication of appendi-

citis when operation has been too long delayed. In the case of these babies (most of the patients were under four years old) there was no appendicitis and the peritonitis, called a primary type, followed infections of the nose and throat in more than half the cases.

Treatment consisted of making a small surgical incision into the abdomen, usually under local anesthetic, and drawing out a bit of the pus for examination to determine the germ causing the trouble. A drain is left in the wound to draw off more of the pus, and sulfanilamide is immediately given by hypo-

dermic injection until the patient is able to take it by mouth. If examination of the pus shows that the germ is the pneumococcus (in most of these cases it is either the pneumococcus or the streptococcus) sulfapyridine is given instead of sulfanilamide and anti-pneumonia serum of the correct type is also given.

Science News Letter, October 28, 1939

PUBLIC HEALTH

Safety Commandments For Fall Hunting

HUNTING season is upon us again. Sportsmen, seasoned and tyro, will be packing guns over hill and dale, hopping for a buck, or a duck, or anyhow a rabbit.

With a well-calculated sense of timeliness, one of the leading American manufacturers of sporting powders has prepared Ten Commandments of Safety for hunters. They are worth quoting in full:

1. Treat every gun with the respect due to a loaded gun. This is the cardinal rule of gun safety.
2. Carry only empty guns, taken down or with the action open, into your automobile, camp, and home.
3. Always be sure that the barrel and action are clear of obstructions.
4. Always carry your gun so that you can control the direction of the muzzle even if you stumble.
5. Be sure of your target before you pull the trigger.
6. Never point a gun at anything you do not want to shoot.
7. Never leave your gun unattended unless you unload it first.
8. Never climb a tree or a fence with a loaded gun.
9. Never shoot at a flat, hard surface or the surface of water.
10. Do not mix gunpowder and alcohol.

Science News Letter, October 28, 1939

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MEDICINE

Two New Attacks Made On Painful Rheumatic Fever

Sulfanilamide Practically Eliminated Recurrence In Group of Children; Germ Believed Identified

RHEUMATIC fever, disastrous malady that makes heart cripples of young children and kills thousands of them each year, is being attacked along two lines which seem to promise hope of eventual conquest of the plague.

One line of attack is being made with the successful new chemical weapon against many other diseases, sulfanilamide. Recurrence of rheumatic attacks in one group of children has been practically eliminated by having the children take three small daily doses of this drug, Dr. Alvin Coburn of Presbyterian Hospital, New York, has reported.

These recurrences of rheumatic fever are said to be more dangerous than the initial attack and to have a high death rate. If the child does not die his heart is nearly always further damaged. When the children in Dr. Coburn's group were getting sulfanilamide they had these recurrences at the rate of less than one per hundred children, compared with the usual rate of 35 to 50 per hundred. About fifteen cents' worth of the drug a day seemed fully as effective in keeping the children well as trips to Florida, Southern California or other warm, dry climates which are known to be helpful in this condition. The economic factor is important because rheumatic fever is usually a disease of poverty.

Dr. Coburn warned, however, that sulfanilamide is actually harmful if given during acute attacks of rheumatic fever.

Second important attack on the ailment was launched in England by Dr. C. A. Green of the Royal Naval Medical School, Greenwich. Dr. Green's studies will be interrupted by the war, but he hopes American scientists can carry

them on. He has given important evidence of what many have believed but no one has conclusively proved—that the disease is caused by streptococcus germs. By unusually careful technic he was able to grow from the heart valves of 10 children who died of acute rheumatic fever the same type of streptococcus germs which had been found in their throats during the sore throat which preceded by a week the actual rheumatic attack. Curiously, Dr. Green's results came from his attempt to find proof for his own doubt that streptococcus germs were guilty of causing rheumatic fever.

Science News Letter, October 28, 1939

ARCHAEOLOGY

Clothes Important In Old Incan Empire

WHEN strangeness of 1939 winter hats and shoes and silhouettes has been exhausted in conversation, there remains the argument as to whether clothes get queerer.

For perspective, turn back to almost any other civilization and survey the clothes problems. Edda V. Renouf of the Brooklyn Museum has done something of this sort with Indians of the Incan Empire in prehistoric Peru. They had their oddities.

They were, she concludes, apparently free from dictates of "the fanciful rogue Fashion." The same tunic and mantle styles were good for centuries. But when it came to accessories and trimmings, there was endless variety, and Miss Renouf rates clothes as very important in life of the Incan Empire.

The Inca, ruler of several million Indians, is said to have kept a sisterhood of maidens busy making his clothes. He wore a garment once, and since no one else dared wear his clothing, piles of exquisitely woven and decorated articles were stored away.

In centuries preceding Spanish Conquest, when the Incas dominated a huge area with fascist tactics, they even dictated hair styles. Only the ruling Inca could wear short hair, says Miss Re-

RADIO

Dean Joseph Barker, of Columbia University's School of Engineering, will be the guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, November 6, 4:30 p.m., EST, 3:30 CST, 2:30 MST, 1:30 PST. Listen in on your local station. Listen in each Monday.

nouf. Medium length was for aristocracy, and long hair for the general public.

In a crowd, you could pick out Indians from different districts by their headgear, and judge social rating. The Inca's headdress had a crimson fringe, and according to one historian, if a thread of it accompanied an order, it was unhesitatingly carried out, however drastic.

Wearing sandals too short was a custom, for both men and women. They said it provided a toe grip against slipping.

Peruvian men had no pockets, but they could reach toward the left hip and find their small belongings in a pouch, slung from the right shoulder.

Men as well as women wore jewelry, and the enormous ear stoppers worn by high officials won the nickname Big Ears from the Spaniards. That may not be Fashion, but in current slang it still looks like "spinach."

Science News Letter, October 28, 1939

CHEMISTRY

Canadian Inventors Find New Resin Material

A NEW type of organic resin material which can be made into artificial silk fibers has just been patented at the U. S. Patent Office by the Canadian inventors George O. Morrison and Aubrey F. Price of Quebec Province.

The new resins are of the vinyl-acetal type. Fourteen different ways of preparing them are described in the patent, which has been assigned to Shawinigan Chemicals Ltd. of Montreal. Three of the methods yield materials "suitable for the manufacture of threads of artificial silk," states the patent.

Other forms of the new type resin also have wide use. Some are suitable for the interior lining of bottle caps and cans because of their insoluble properties. Others can be made into clear, colorless transparent sheeting suitable for wrapping materials.

Science News Letter, October 28, 1939

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PHYSIOLOGY

Scientist Tells How Chemistry Affects Color Vision

Harvard Researcher Has Isolated and Identified Three Color Pigments in Eye Which Act as Color Filters

THE FIRST explanation of the chemistry underlying color vision in an animal was reported to the Optical Society of America at Lake Placid by Dr. George Wald of the Harvard University Biological Laboratories.

Dr. Wald has isolated and identified three color pigments found in the cones of the chicken eye, the color-seeing receptors. These pigments, he said, probably act as color filters in much the same sort of arrangement used to take color photographs.

The pigments are astacene, which is responsible for the color of boiled lobsters; xanthophyll, the pigment of egg yolk, and a carotene, a pigment giving carrots their characteristic color.

The color "film" of the chicken eye, on which the filtered light falls to start the seeing process, contains a violet, light-sensitive pigment which Dr. Wald has named iodopsin. It is the first light-sensitive pigment ever found in the cones of the eye.

Dr. Wald, winner of this year's Eli Lilly prize of the American Chemical Society for his outstanding research on the chemistry of vision, gave his explanation of chickens' color vision during a paper in which he massed experimental evidence to prove that many of the complicated phenomena of seeing, a process involving man's highest mental powers, can be explained on a basis of relatively simple chemical and physical reactions which take place in the eye.

More and more, he said, scientists are learning that many of the properties of vision are derived directly from the properties of various substances located in the retina of the eye, the photographic plate on which images of the outside world are formed.

As an example Dr. Wald reported the direct chemical analysis of retinas which show that rhodopsin, a rose-colored, light-sensitive pigment found in the rods, is manufactured by the body from two different precursors, either retinene or vitamin A.

This discovery has afforded a physico-chemical explanation of varying rates of the adaptation of the eye to darkness, for the synthesis from retinene is much more than that from vitamin A and the speed of the adaptation depends entirely on which precursor is being used.

It also explains why a deficiency of vitamin A results in night-blindness, the inability to see in dim light, he reported. Without the vitamin there just isn't enough rhodopsin being formed.

In studies of experimentally induced night-blindness in human subjects, conducted by Dr. Selig Hecht and his colleagues at Columbia University and Dr. Wald, it was found that not only the rods but also the cones of the eye are affected by a faulty diet, a discovery which implies that vitamin A may be the precursor of the light-sensitive material of the cones as well as of rhodopsin.

Dr. Wald has found that visual sensitivity may decrease markedly within 24 hours on a vitamin-deficient diet. It can be cured, however, in as short a time as 20 minutes with a single dose of vitamin A or the provitamin, carotene.

Science News Letter, October 28, 1939

CHEMISTRY

U. S. Chemistry Ready But Sees Loss in War

AMERICAN chemical industry stands ready to go into chemical wartime production but will do so only with the greatest reluctance. This is the thought behind the leading editorial in the offi-

Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey and the Jesuit Seismological Association resulted in the location of the following preliminary epicenters:

Tuesday, Oct. 17, 1:22.2 a.m., EST
In the South Pacific, near the New Hebrides islands. Latitude 14 degrees south, longitude 167 degrees east (approximately). A strong shock.

Thursday, Oct. 19, 6:54.0 EST
Near point where Saguenay river flows into St. Lawrence. Latitude, 48 degrees north. Longitude, 70 degrees west, approximately. A sharp shock.

Stations cooperating with Science Service in reporting earthquakes recorded on their seismographs are:

University of Alaska, College, Alaska; Apia Observatory, Apia, Western Samoa; University of California, Berkeley, Calif.; Dominion Observatory, Ottawa; Dominion Meteorological Observatory, Victoria, B. C.; The Franklin Institute, Philadelphia; Harvard University Observatory, Harvard, Mass.; University of Hawaii, Honolulu; Hong Kong Observatory, Hong Kong, China; Magnetic Observatory of the Carnegie Institution of Washington, Huancayo, Peru; Massachusetts Institute of Technology, East Machias, Maine; University of Michigan, Ann Arbor, Mich.; Manila Observatory, Manila, P. I.; Montana School of Mines, Butte, Mont.; Montana State College, Bozeman, Mont.; Pennsylvania State College, State College, Pa.; Phu Lien Observatory, near Hanoi, French Indo-China; Seismological Observatory, Pasadena, Calif.; University of South Carolina, Columbia, S. C.; U. S. Weather Bureau, University of Chicago; Williams College, Williamstown, Mass.; University of Wisconsin, Madison, Wis.; Zikawei Observatory, near Shanghai, China; observatories of the Jesuit Seismological Association at Canisius College, Buffalo, N. Y., Fordham University, New York City, Georgetown University, Washington, D. C., St. Louis University, St. Louis, St. Xavier College, Cincinnati, and Weston College, Weston, Mass.; observatories of the U. S. Coast and Geodetic Survey at San Juan, P. R., Sitka, Alaska, Tucson, Ariz., and Ukiah, Calif.

cial journal of the American Chemical Society, *Industrial and Engineering Chemistry*.

In contrast to 1914, American chemistry has an abundance of plants and trained men to meet almost any conceivable expansion of the nation's chemical needs.

But the chemical industry is wary of going into a terrific wartime expansion. Having once gone through a fever of war orders, hasty over-building of plants, hurried research to develop unfamiliar methods and then the final collapse at the war's end, chemical manu-

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facturers are most reluctant to risk the same road again.

No sane chemical concern is willing to hazard its permanent research programs of peacetime activity for hasty war booms. Just before the European conflict, orders from abroad for certain war articles of chemical manufacture went begging in the American market. Only if America enters the fight will this policy change.

Some readjustments common to all industries are foreseen due to the war, but increased demands from countries now at war can be handled without undue plant expansion.

Science News Letter, October 28, 1939

ANTHROPOLOGY

Ancient Russian Skull Like American Indian's

See Front Cover

THE HALLOWE'EN appearance of the front cover of this week's SCIENCE NEWS LETTER is given it by the skull of some ancient of Russia just brought to America for Dr. Ales Hrdlicka of the Smithsonian Institution.

A new discovery, it strongly supports the theory that the American Indians came from Asiatic races, because it is almost identical in appearance with skulls of North American Indians.

Science News Letter, October 28, 1939

ENGINEERING

Lighted Guide Lines Make Night Roads Safer

LATEST idea for making the roads safe for night driving: Illuminated guide lines a yard or two long set into the road's center every fifty feet made of tubular lighting covered with a red phenolic transparent plastic. The idea is also applicable to runways on airplane landing fields.

Science News Letter, October 28, 1939



Clocked by the Sun

SCIENTIFIC evidence points very strongly to the powerful influence of the daily hours of light timing the occurrence of all kinds of biological processes. Some are initiated by the gradual lengthening of days in spring, others by the gradual shortening of days in autumn.

The phenomenon, now known by the technical name of "photoperiodism" was first discovered in plants by two research workers in the U. S. Department of Agriculture. They found that lengthening days stimulated spring flowers to bloom, and that shortening days had the same effect on plants that blossom in late summer and autumn, like asters, cosmos, gentians and the pestiferous ragweed.

Basic method of experimentation was simple, though it involved some fairly heavy equipment. Growing-houses for the plants were so arranged that daylight could be completely cut off before sunset if desired. For the opposite effect, large numbers of electric lamps supplied artificial sunshine after the sun had gone down. By proper manipulation of their lengths of day, plants could be made to bloom practically at the will of the experimenters, or kept from flowering for several seasons on end.

First tests for possible effects of length of day on animals were made by a western Canadian zoologist. He caged small birds of migratory species when days were shortening in the fall, and gave them artificially lengthened days, simulating spring. When released, the birds flew north instead of south.

Since these pioneer experiments, some twenty years ago, the results with both plants and animals have been confirmed and greatly extended by biologists in this country and Europe. The importance of length of day in the reproductive cycle of animals having a definite breeding season has been established especially by work done in Connecticut.

The mechanism by which changing day-length affects plants is not yet definitely known, partly because plants have no special light-sensitive organs, like the animal eye. But it is apparently pretty well proven that in animals the light stimulus works through the eye on the internal glands, especially the pituitary "master gland," situated beneath the brain. The secretions of these glands in turn have important effects on the behavior of the animals.

Science News Letter, October 28, 1939

ARCHAEOLOGY

Museum Exhibits Pair of 1500-Year-Old Horseshoes

A 1500-YEAR-OLD pair of small iron horseshoes which probably once shod the hooves of a Swiss Lake Dweller's horse is now on exhibition at the Field Museum of Natural History. It represents the last cultural phase of the Lake Dwellers of Lake Neuchatel. Iron horseshoes were known by the fifth century.

Science News Letter, October 28, 1939

CHEMISTRY

Peat Yields Kerosene In New Soviet Plant

FROM Soviet scientists, according to Tass: Peat is yielding kerosene, benzene, carbolic acid, wax, ammonium sulfate, etc., through a year-round artificial drying of peat under pressure in autoclave at 180-200° Centigrade. Waste left is used for production of alcohol and yeast.

The first plant near Leningrad is nearing completion with a capacity of 300,000 tons dry peat annually. Oil spouts from three wells off the coast in the Caucasian Sea near Baku like the petroleum drilled from under the sea off U.S.A. California coast.

Science News Letter, October 28, 1939

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Additional Reviews
On Page 288

Engineering

MEN UNDER THE SEA—Edward Ellsberg—*Dodd, Mead*, 365 p., \$3. The drama, romance and danger of diving and divers told by one of the Navy's foremost experts. Just finished as the *Squalus* sank last May, the last chapter was revised by Commander Ellsberg to include the story of this tragedy and how the Navy rescued all living survivors.

Science News Letter, October 28, 1939

Natural History

A BIBLIOGRAPHY OF NATURE-STUDY—Eva L. Gordon—*Comstock*, 44 p., 25c.

Science News Letter, October 28, 1939

Chemistry

CHEMICALS OF COMMERCE—Foster Dee Snell and Cornelia T. Snell—*Van Nostrand*, 542 p., \$5. Useful as a handbook for those who use chemicals in business, industry or research. Not a chemical dictionary, it is a source of information about the composition of actual commercial products.

Science News Letter, October 28, 1939

Engineering

INDUSTRIAL ELECTRICITY, Part I (2d. ed.)—Chester L. Dawes—*McGraw-Hill*, 387 p., \$2.20. Electricity for engineers might well be an alternative title for this book, for it is the kind of volume suitable for first year students in technical schools.

Science News Letter, October 28, 1939

Engineering

ENGINEER'S FACT FINDER—*Domestic Engineering Company*—154 p., \$1. Scores upon scores of attractive charts and diagrams which will be very useful for professional engineers.

Science News Letter, October 28, 1939

Chemistry

INTRODUCTION OF QUALITATIVE CHEMICAL ANALYSIS—Roy K. McAlpine and Byron A. Soule—*Van Nostrand*, 118 p., \$1.50.

Science News Letter, October 28, 1939

Regional Study

REGIONAL PLANNING, Part VIII—Northern Lakes States—Northern Lakes States Regional Comm.—*Govt. Print. Off.*, 63 p., 25 c. (Report to National Resources Comm.)

Science News Letter, October 28, 1939

Physics

MATTER, MOTION AND ELECTRICITY—Henry D. Smyth and Charles W. Ufford—*McGraw-Hill*, 648 p., \$3.75. Described as "a modern approach to general

physics," this text came into existence to serve the introductory courses at Princeton. It is primarily concerned with principles of physics and the methods by which they are discovered. The presentation is based on the developments made in atomic physics during the past forty years.

Science News Letter, October 28, 1939

Conservation

PANDORA'S BOX, The Story of Conservation—Marian E. Baer—*Farrar & Rinehart*, 292 p., \$2. The title is well chosen: the book stresses the swarming troubles which we as a nation have loosed upon our own heads by reckless or ignorant disturbances and destruction of the balance of nature. Yet it is not all written in the vein of Jeremiah; there is much of hope, something even of optimism, in the accounts of conservation workers and their labors toward the land's salvation.

Science News Letter, October 28, 1939

Genetics

ANIMAL BREEDING (3d. ed.)—Laurence M. Winters—*Wiley*, 316 p., \$3.50. Progress in applied genetics in the nine years that have elapsed since the second edition of this work has made possible a considerable amount of revision.

Science News Letter, October 28, 1939

Anatomy—Physiology

A TEXTBOOK OF ANATOMY AND PHYSIOLOGY (6th ed.)—Jesse Feiring Williams—*Saunders*, 607 p., \$2.75. An interesting feature of this text are the directions to the student on how to study, given at the beginning of the book and more specifically at the end of each chapter.

Science News Letter, October 28, 1939

Medicine

SO YOU'RE GOING TO HAVE A BABY (Rev. and Enl.)—Helen Washburn—*Harcourt, Brace*, 214 p., \$1.19. A new edition of an amusing book that gives prospective parents practical advice on subjects ranging from diapers to mama's complexion and figure.

Science News Letter, October 28, 1939

Zoology

ANIMALS OF AMERICAN HISTORY—Paul Bransom—*Stokes*, 48 p., \$2. A panorama of the animals that have figured in the American saga, from Dan'l Boone's "b'ars" to the bison of Buffalo Bill, strikingly illustrated and interestingly described. A fine gift book for a boy.

Science News Letter, October 28, 1939

Military Science

SCIENCE AND MECHANIZATION IN LAND WARFARE—Donald Portway—*Chemical Pub. Co.*, 158 p., \$2.50. Compiled from a series of lectures given by a veteran British officer before groups of his juniors, most of whom are by now either in France or preparing to go there. The contents stem largely from World War experience and later developments, but there are also historical sidelights from earlier conflicts.

Science News Letter, October 28, 1939

Botany

PLANTS OF SUN AND SAND, The Desert Growth of Arizona—Stanford Stevens, Illus. by Gerry Pierce—*Print Room, Tucson, Ariz.*, 46 p., \$1. Attractive sketches and informal descriptions of Southwestern desert trees, shrubs and succulents. Board-bound in the most literal sense: the covers are made of wood.

Science News Letter, October 28, 1939

Chemistry

SEMIMICRO QUALITATIVE ANALYSIS OF INORGANIC MATERIALS—William Buell Meldrum, Earl W. Flodorf and Albert F. Daggett—*American Book Co.*, 354 p., \$2.75. A text book of qualitative analysis as taught at the University of New Hampshire. The increasing use of true micro methods in chemistry makes it imperative that a beginner should learn the semimicro methods here described.

Science News Letter, October 28, 1939

Chemistry

THEORETICAL AND APPLIED ELECTRO-CHEMISTRY (3d. ed.)—Maurice de Kay Thompson—*Macmillan*, 535 p., \$5. Massachusetts Institute of Technology's professor of electrochemistry here gives a revised version of his textbook which has become standard in America in its field. The book has been completely rewritten and a number of new problems have been added to each of the chapters.

Science News Letter, October 28, 1939

Chemistry

THE DETERMINATION OF SMALL AMOUNTS OF CHLOROPHYLL—APPARATUS AND METHOD—Earl S. Johnston and Robert L. Weintraub—*Smithsonian Inst.*, 5 p., 10c. (Smithsonian Miscellaneous Collections, Vol. 98, No. 19)

Science News Letter, October 28, 1939

Economics

HOW STRONG IS BRITAIN?—C. E. Count Pückler—*Veritas Press*, 239 p., \$2.50. See page 279.

•First Glances at New Books

Additional Reviews

On Page 287

General Science

CIVILIZATION BUILDERS—Frederick Houk Law—*Appleton-Century*, 356 p., \$1.32. Biographical telling of the advances to our present day world, in transportation, machinery, photography, electricity, applied chemistry, and medicine. Inspiration and knowledge will be obtained by those who want to take this pleasant approach to the great figures who fashioned the material ingredients of our modern life.

Science News Letter, October 28, 1939

Medicine

A JOURNEY ROUND MY SKULL—Frigyes Karinthy—*Harper*, 288 p., \$2.50. Strong-stomached devotees of the medical case history type of book will find this an absorbing story. According to the publisher's note, the author is a Hungarian man of letters who suffered from a brain tumor. After his recovery he wrote, with the aid of a vivid imagination, the record of his illness from his first symptoms and hallucinations through the operation to convalescence.

Science News Letter, October 28, 1939

Hygiene

THE VINCENT METHOD OF BATHTUB EXERCISES—Vincent Tumminello—*Pelican*, \$3.50. The idea of doing setting-up exercises in the bathtub is novel, though it is hard to see why when done this way they will be any more effective in weight-reducing than when done on the floor.

Science News Letter, October 28, 1939

Chemistry

INORGANIC SYNTHESSES, Vol. I—Harold Simmons Booth, ed.—*McGraw-Hill*, 197 p., \$3. The newest methods of inorganic synthesis are here compiled from the writings of many authors in a volume edited by Prof. Booth. A "must" book for students in this field.

Science News Letter, October 28, 1939

Language

HOW TO WRITE BETTER BUSINESS LETTERS—L. E. Frailey—*American Technical Society*, 198 p., \$2.

Science News Letter, October 28, 1939

Education

THE FEDERAL GOVERNMENT AND EDUCATION—Advisory Committee on Education—*Govt. Print. Off.*, 31 p., 35c.

Science News Letter, October 28, 1939

Psychology

HOW TO INCREASE YOUR BRAIN POWER—Donald A. Laird—*Crowell*, 238 p., \$2. An inspirational type of book for those who are aware of mental handicaps and wish to overcome them. Many psycholo-

gists will undoubtedly fail to share Dr. Laird's optimism regarding the ability of those weak in mentality to "pull themselves up by their bootstraps," so to speak.

Science News Letter, October 28, 1939

Economics

COMMODITY YEAR BOOK, 1939—*Commodity Research Bureau*—616 p., \$7.50. Arranged conveniently by commodity, and including many statistical tables, this book covers production and trade through 1938.

Science News Letter, October 28, 1939

Aeronautics

UN DICCIONARIO DE AERONAUTICA, Espanol - Ingles, Ingles - Espanol—C. Thomas Reid—*Aviation Press*, \$3. A Spanish-English aeronautical dictionary is badly needed, with increasing interest in South American aviation; this should prove very useful.

Science News Letter, October 28, 1939

Entomology

A LABORATORY GUIDE IN ENTOMOLOGY, For Introductory Courses—Robert Matheson—*Comstock*, 135 p., \$2.

Science News Letter, October 28, 1939

Conservation

SOIL CONSERVATION SURVEY HANDBOOK—E. A. Norton—*Govt. Print. Off.*, 40 p., 20c. (U. S. Dept. of Agric., Misc. Pub. No. 352).

Science News Letter, October 28, 1939

General Science

SCIENCE PROBLEMS FOR THE JUNIOR HIGH SCHOOL, Book 3—Wilbur L. Beauchamp, John C. Mayfield and Joe Young West—*Scott, Foresman*, 756 p., \$1.68. One of those modern texts that should make junior high school science very interesting. There is an accent on doing and asking why. A list of important science words in the book, with pronunciation and meaning of each one, is an important feature.

Science News Letter, October 28, 1939

Geology

GEOLOGIC MAP AND GUIDE OF THE ISLAND OF OAHU, HAWAII (With a Chapter on Mineral Resources)—Harold T. Stearns—*Distributed by the U. S. Geological Survey, Room 333, Federal Bldg., Honolulu, Hawaii*, 75 p., map. Illustrated highway guide, with large-scale map of one of the best known and most interesting of all the world's volcanic islands.

Science News Letter, October 28, 1939

Statistics

GRAPHIC PRESENTATION—Willard Cope Brinton—*Brinton Associates*, 512 p., \$5. Much more than a manual on how to plot curves and draw diagrams, is this reference work describing a multitude of varied ways of presenting business and other facts vividly and graphically.

Science News Letter, October 28, 1939

Biology

BIOLOGY—Brother H. Charles, F. S. C.—*Bruce Pub. Co., Milwaukee*, 408 p., \$1.72. A textbook in general biology intended for use in Catholic high schools, clearly presented and unusually cleanly illustrated. Special attention is given to the human significances, particularly in the fields of health and conservation.

Science News Letter, October 28, 1939

Botany

PARTNER OF NATURE—Luther Burbank; Wilbur Hall, ed.—*Appleton-Century*, 315 p., \$3. A posthumous work by the well-known California plant breeder, compiled and edited out of great masses of writings which he left behind.

Science News Letter, October 28, 1939

Mineralogy

MINERALS, METALS AND GEMS—A. Hyatt Verrill—*Page*, 293 p., \$3. A generous-sized book of facts and lore about the mineral kingdom, produced by a well-known popular writer.

Science News Letter, October 28, 1939

Zoology

THE WAY OF A LION—Alden G. Stevens—*Stokes*, 144 p., \$1.75. Biography of a magnificent animal, named only The Lion, told by one who knew him during years spent on the East African veldt. A book that lions would understand, if lions could read.

Science News Letter, October 28, 1939

Medicine

MEDICAL OCCUPATIONS FOR GIRLS, Women in White—Lee M. Klinefelter—*Dutton*, 317 p., \$2. Useful information interestingly presented which should help many a girl with a leaning toward medicine find her vocation.

Science News Letter, October 28, 1939

Education

THE EFFECT OF VARIED AMOUNTS OF PHONETIC TRAINING ON PRIMARY READING—Donald C. Agnew—*Duke Univ. Press*, 50 p., \$1.

Science News Letter, October 28, 1939

General Science

TEACHER'S MANUAL, For use with the textbook, "Science in Our Lives"—Benjamin C. Gruenberg and Samuel P. Unzicker—*World Book Co.*, 171 p., 80c.

Science News Letter, October 28, 1939